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# United States Patent [19]

**Schutz**

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[45] **Date of Patent: Oct. 28, 1997**

[54] **PALLET CONTAINER**

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[73] Assignee: **Protechna S.A.**, Fribourg/Schweiz, Switzerland

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.**[6] ..... **B65D 19/00**

[52] **U.S. Cl.** ..... **220/401**; 220/1.5; 220/403; 220/404

[58] **Field of Search** ..... 220/403, 400, 220/401, 404, 470, 4.21, 257, 663, 684, 1.5

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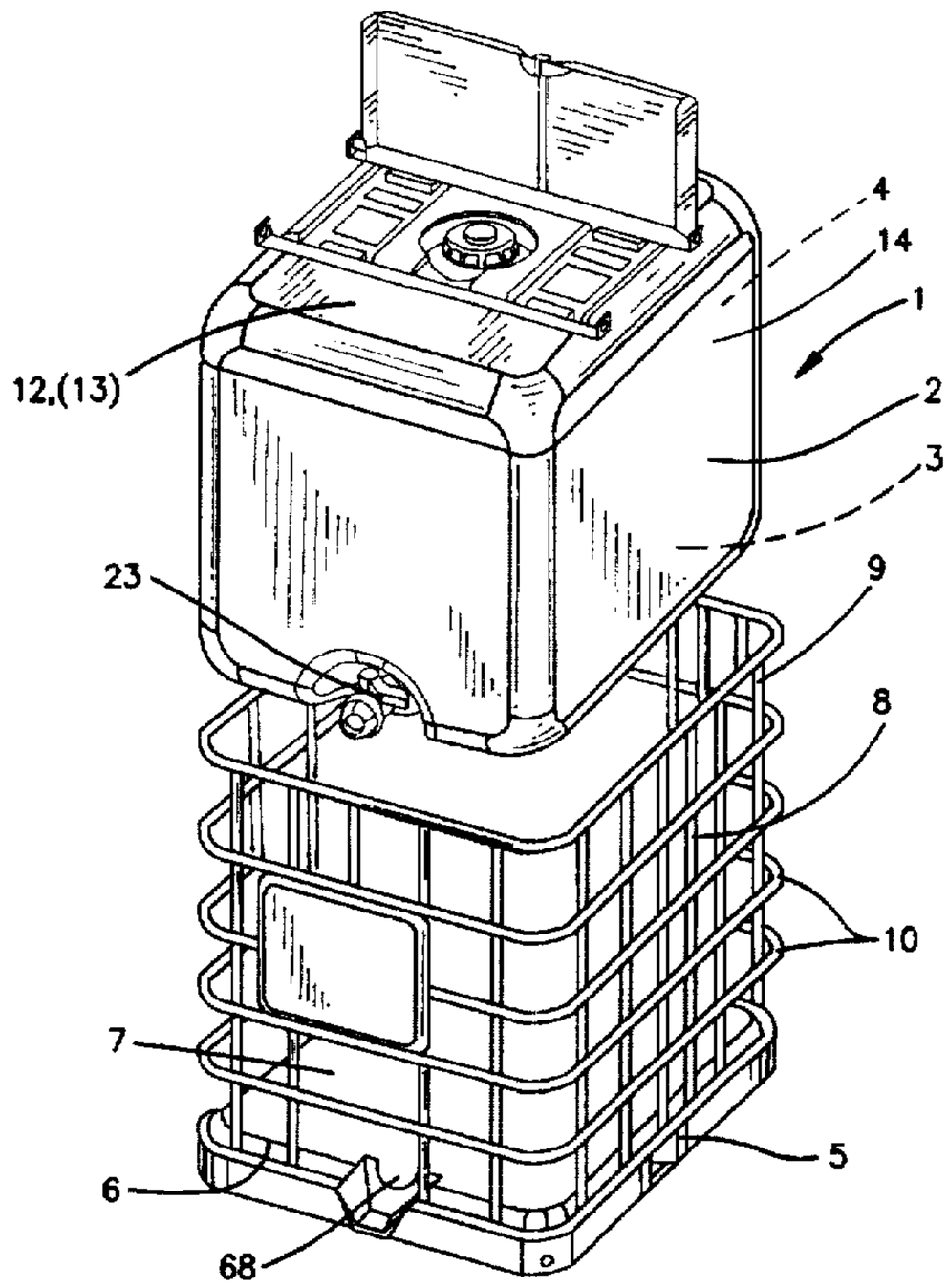
*Attorney, Agent, or Firm*—Young & Thompson

[57] **ABSTRACT**

A pallet container (1) which may be used as a one-way of multi-way container to transport and store fluids, includes a blow molded fluid container (2) made of plastic which has a drain bottom (3) and a flexible inner liner (4) made of plastic foil or a composite metal-plastic foil. A pallet (5) which is designed as a floor pan (6) made of sheet metal or plastic which has a drain bottom (7) designed to serve as a form-fitted receptacle for the fluid container (2), as well as a metal grid casing (8) or sheet metal casing which encloses the fluid container (2). The fluid container (2) is sealed with a removable closure (12) which allows a simple and fast insertion of the inner liner (4) in the fluid container (2). To facilitate the insertion and removal of the inner liner into and/or from the fluid container, the same may be equipped with an integrally molded hinged cover, and it is possible to divide the fluid container into two halves after the blow molding.

**22 Claims, 17 Drawing Sheets**



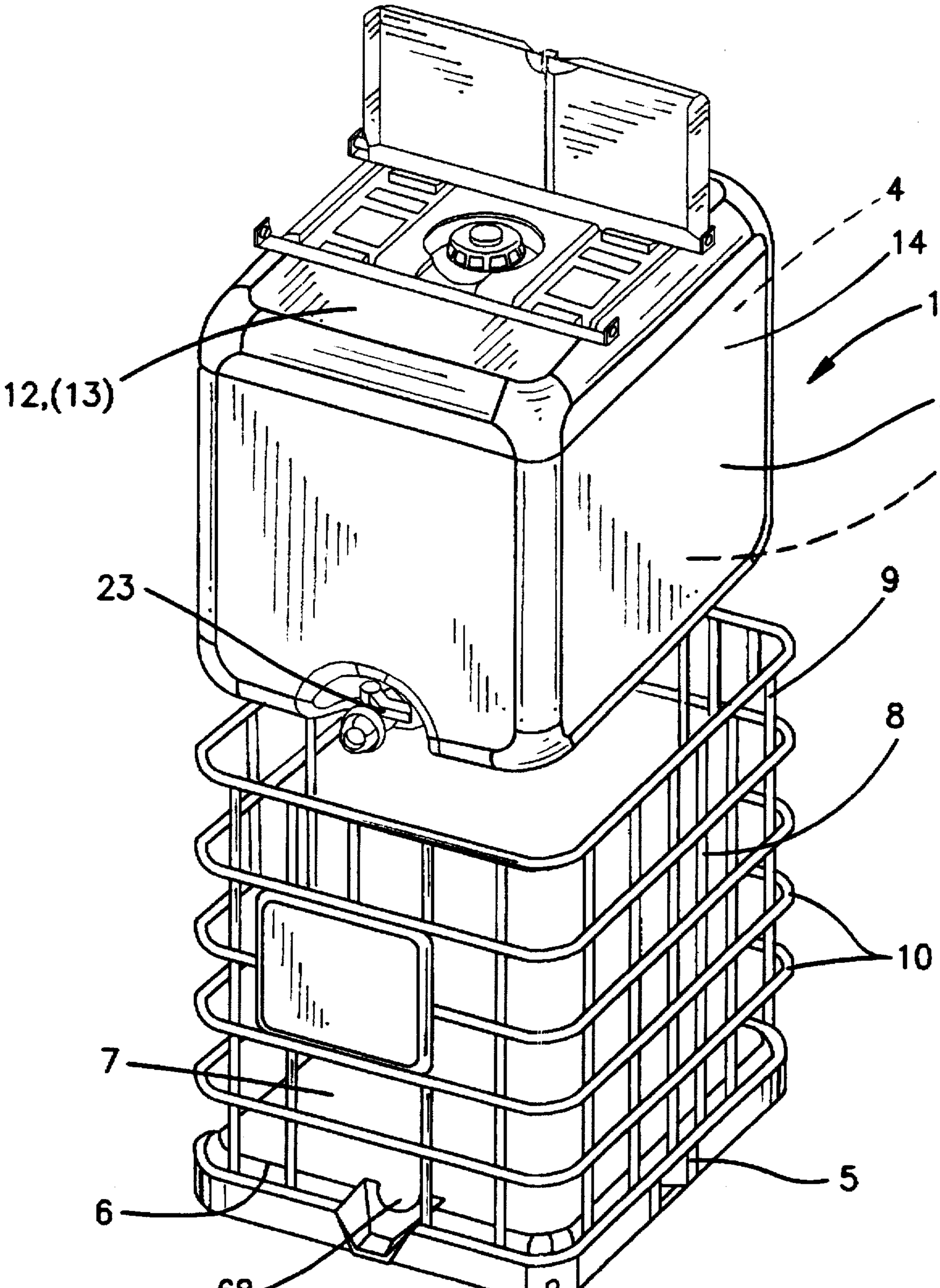



FIG. 1

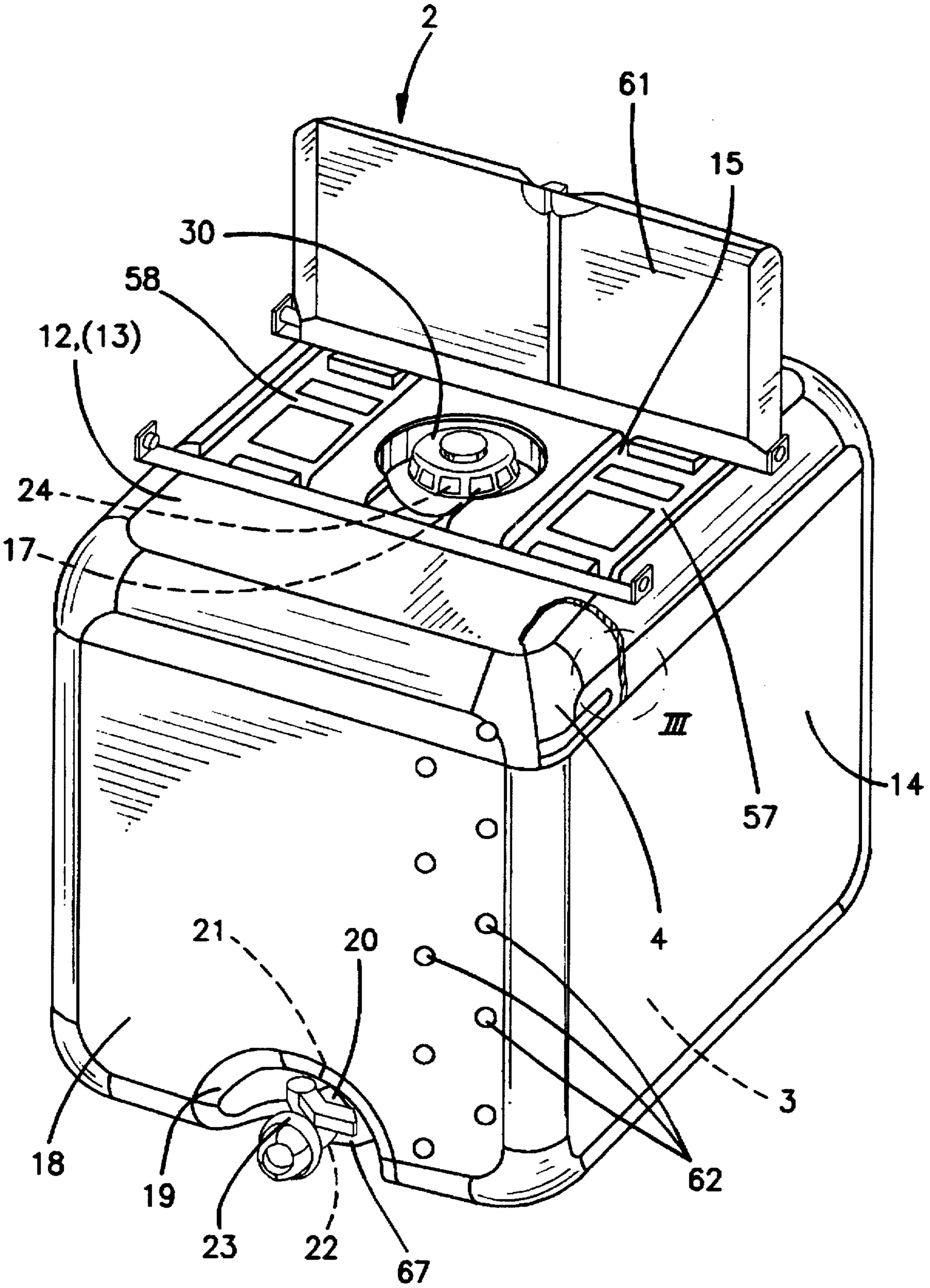



FIG. 2

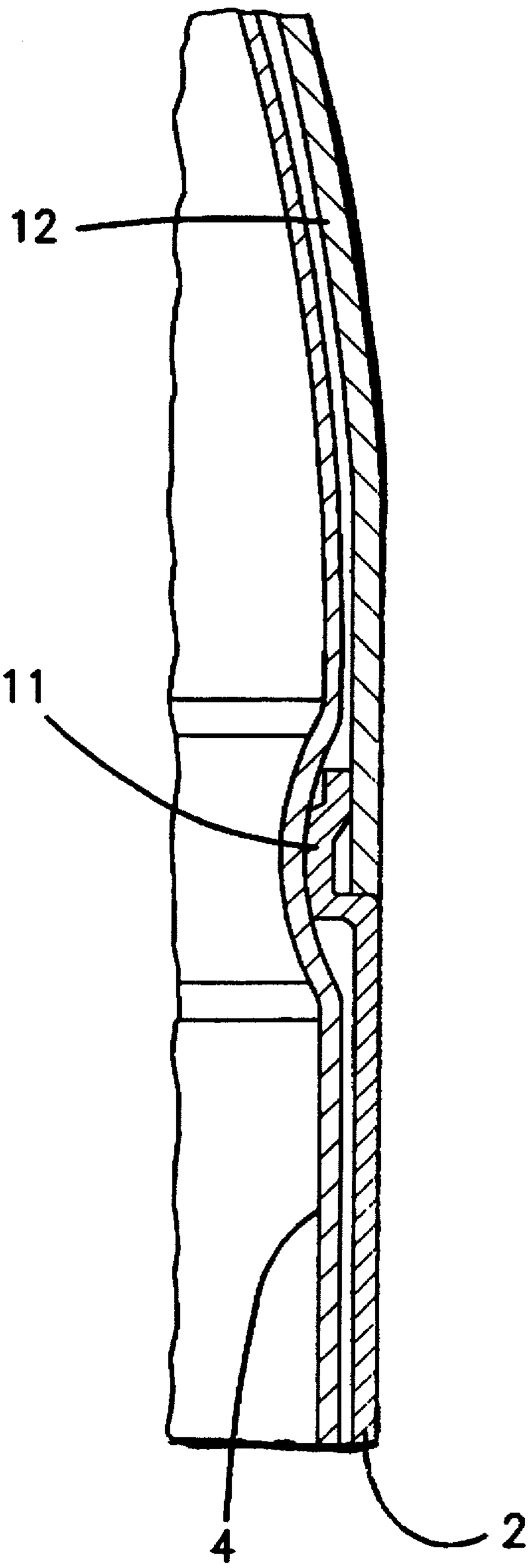



FIG. 3

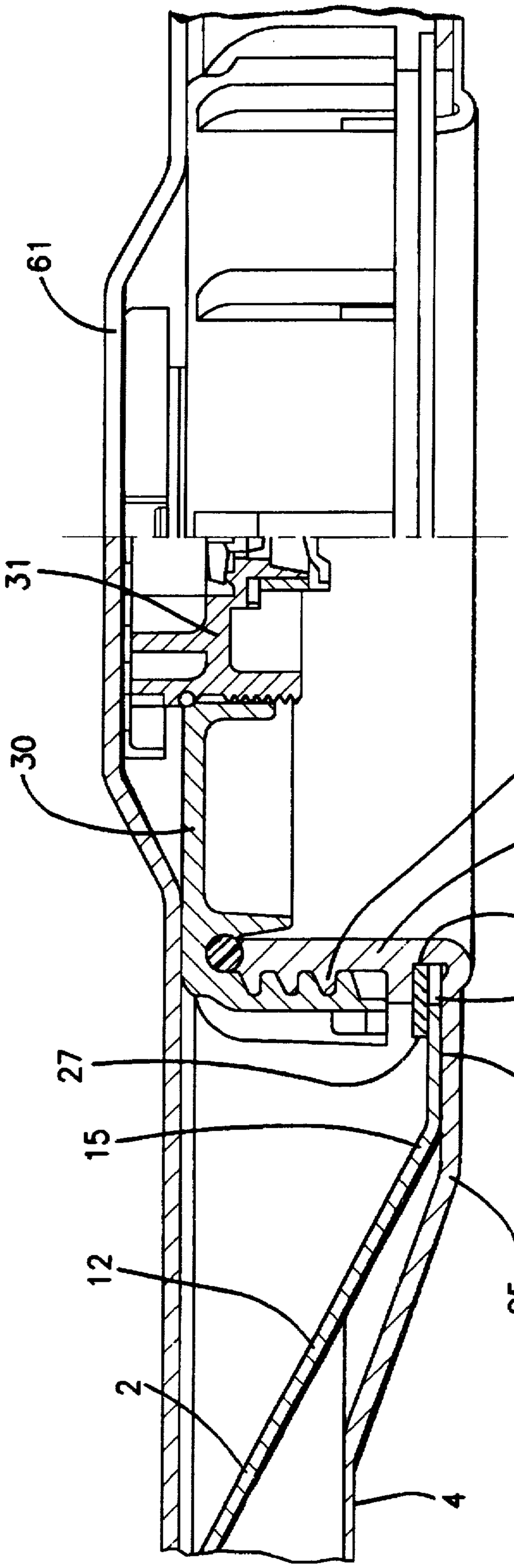



FIG. 4

FIG. 5

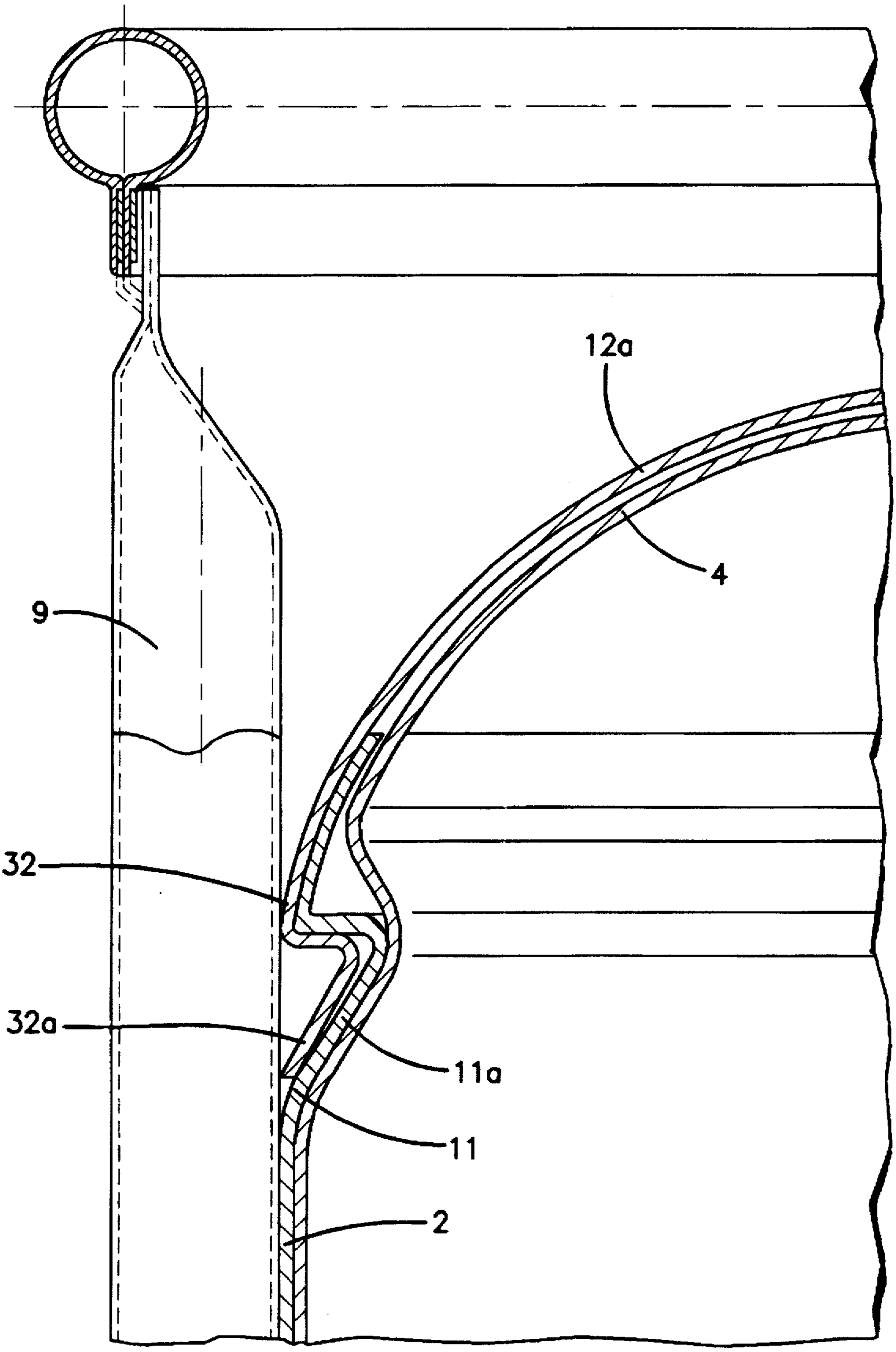


FIG. 6

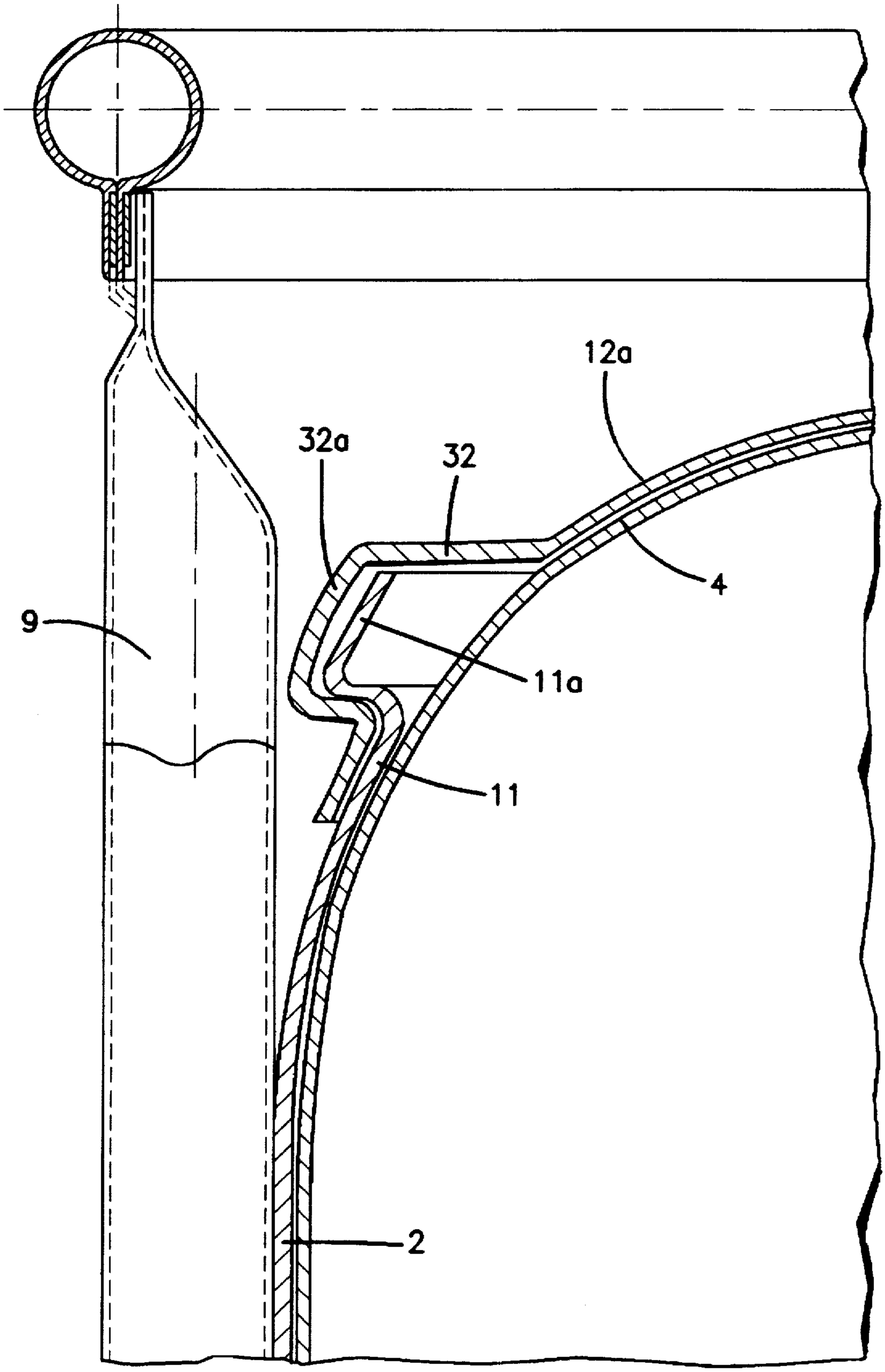


FIG. 7

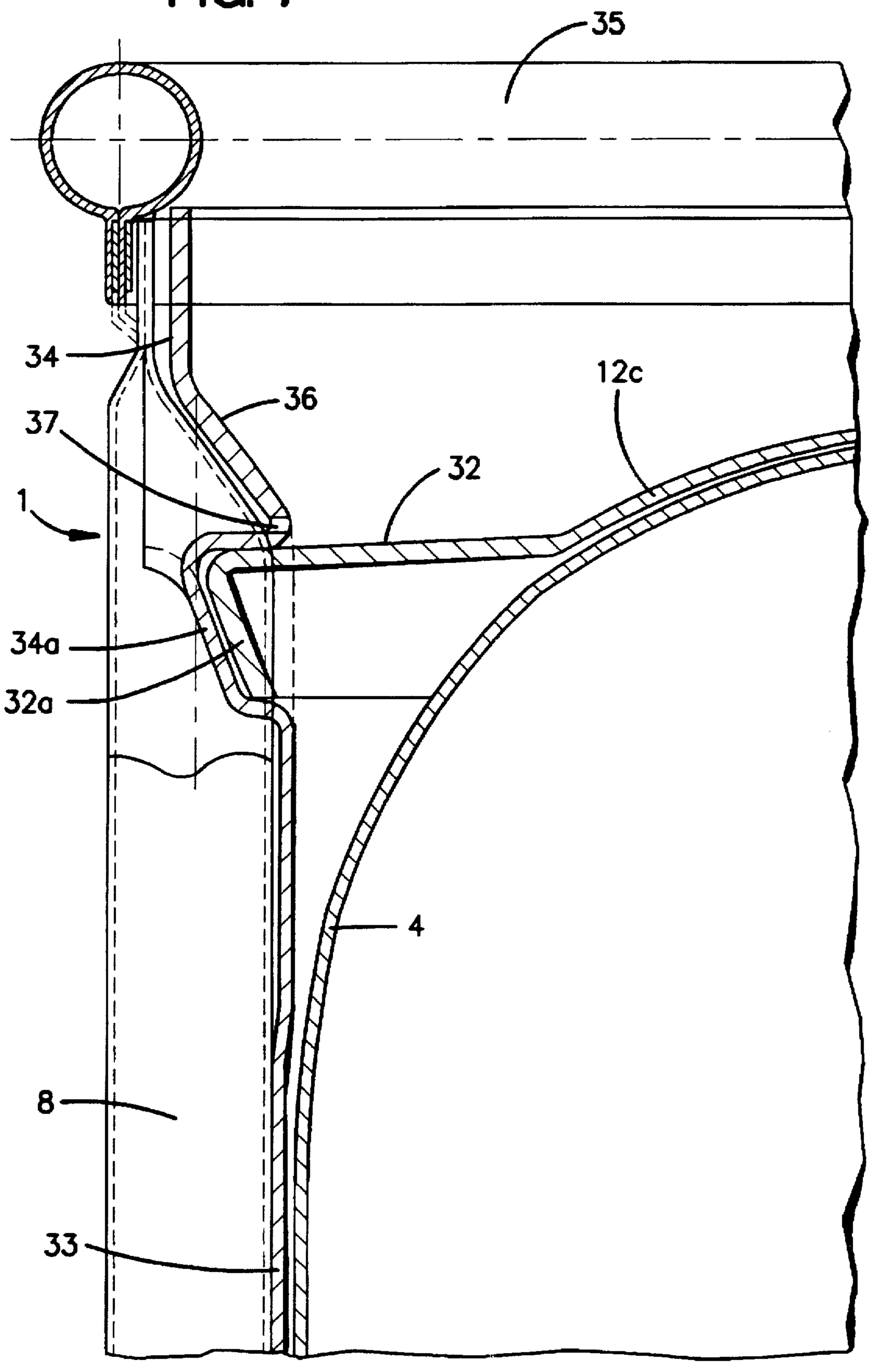


FIG. 8

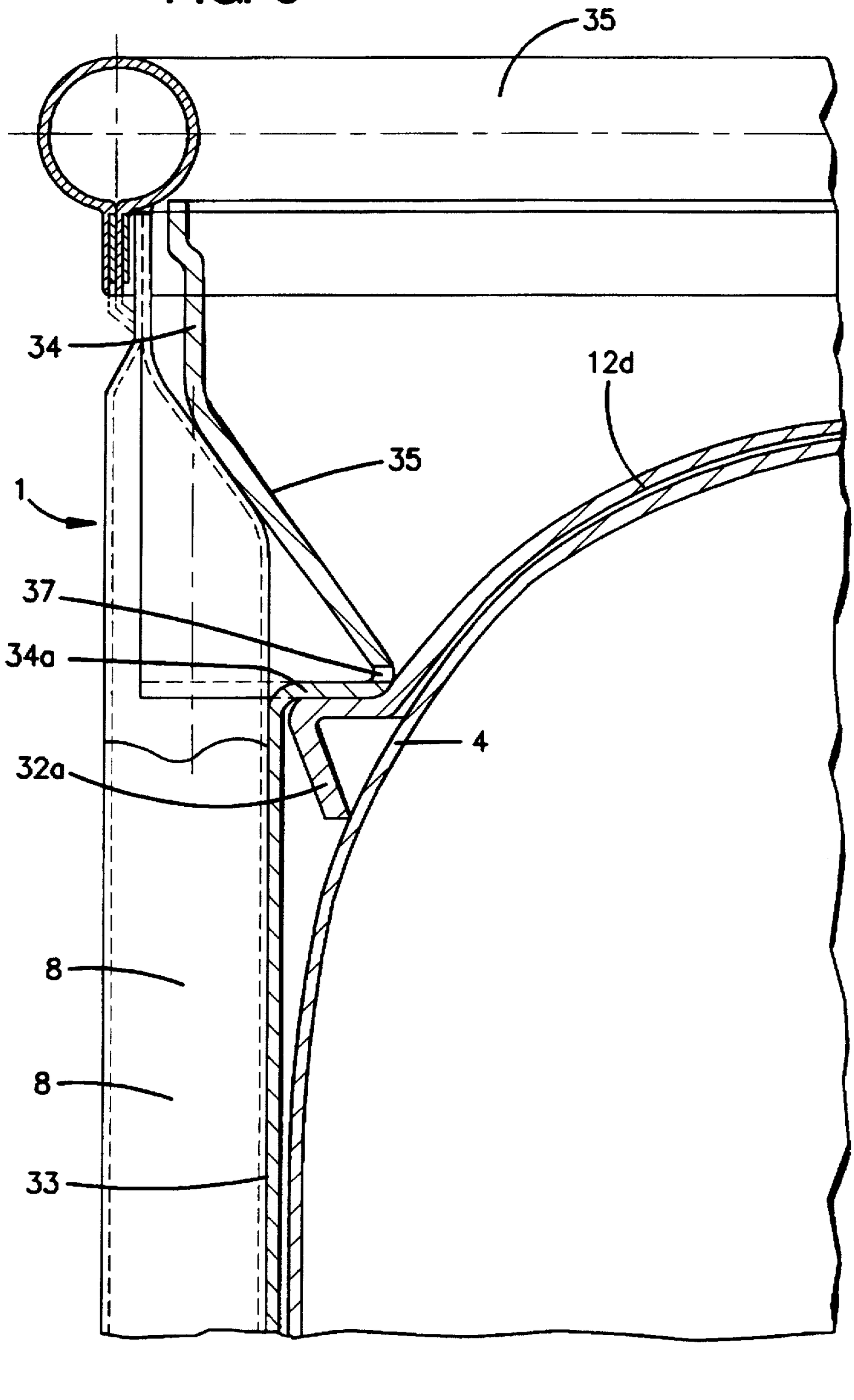
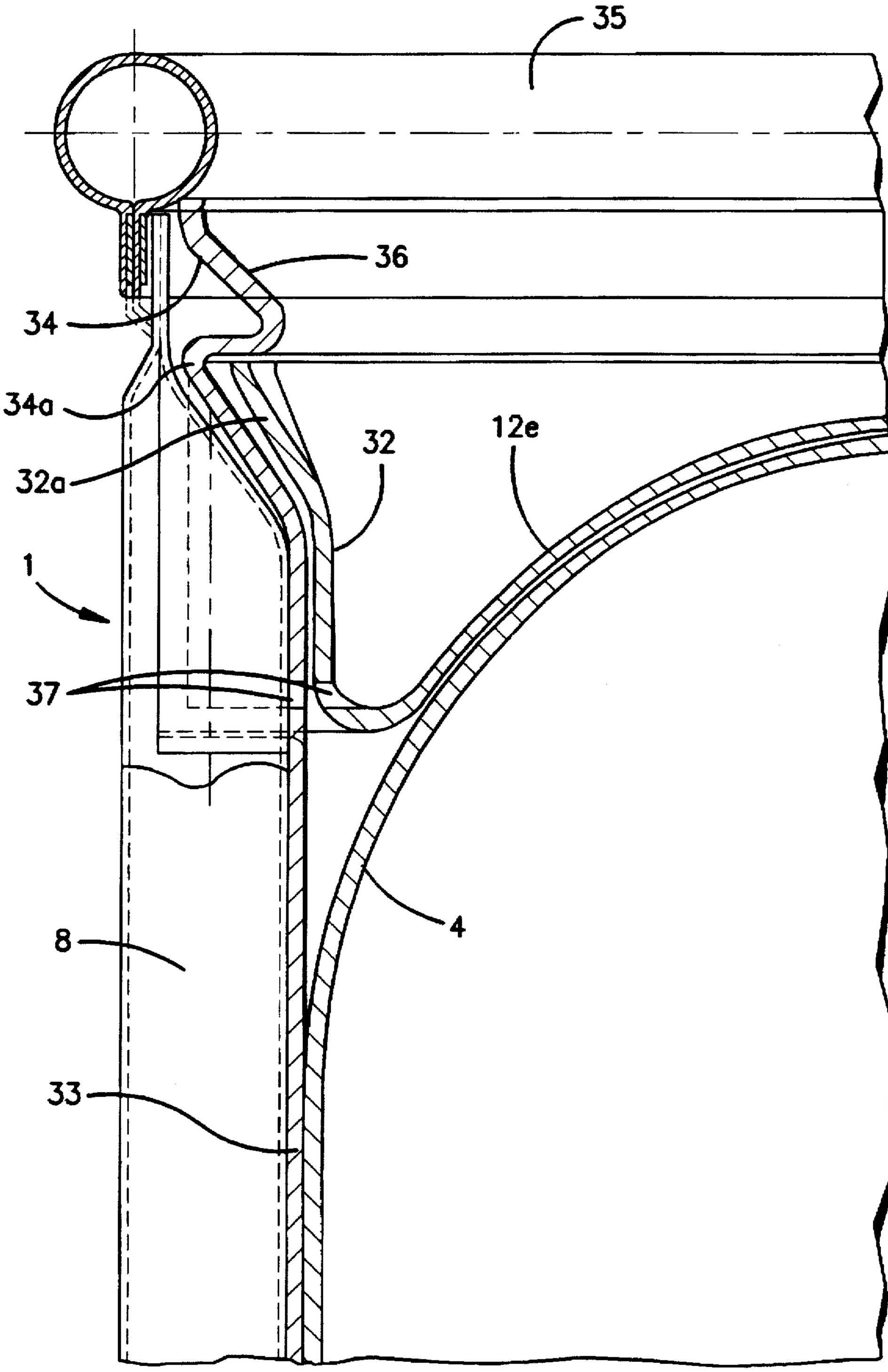


FIG. 9



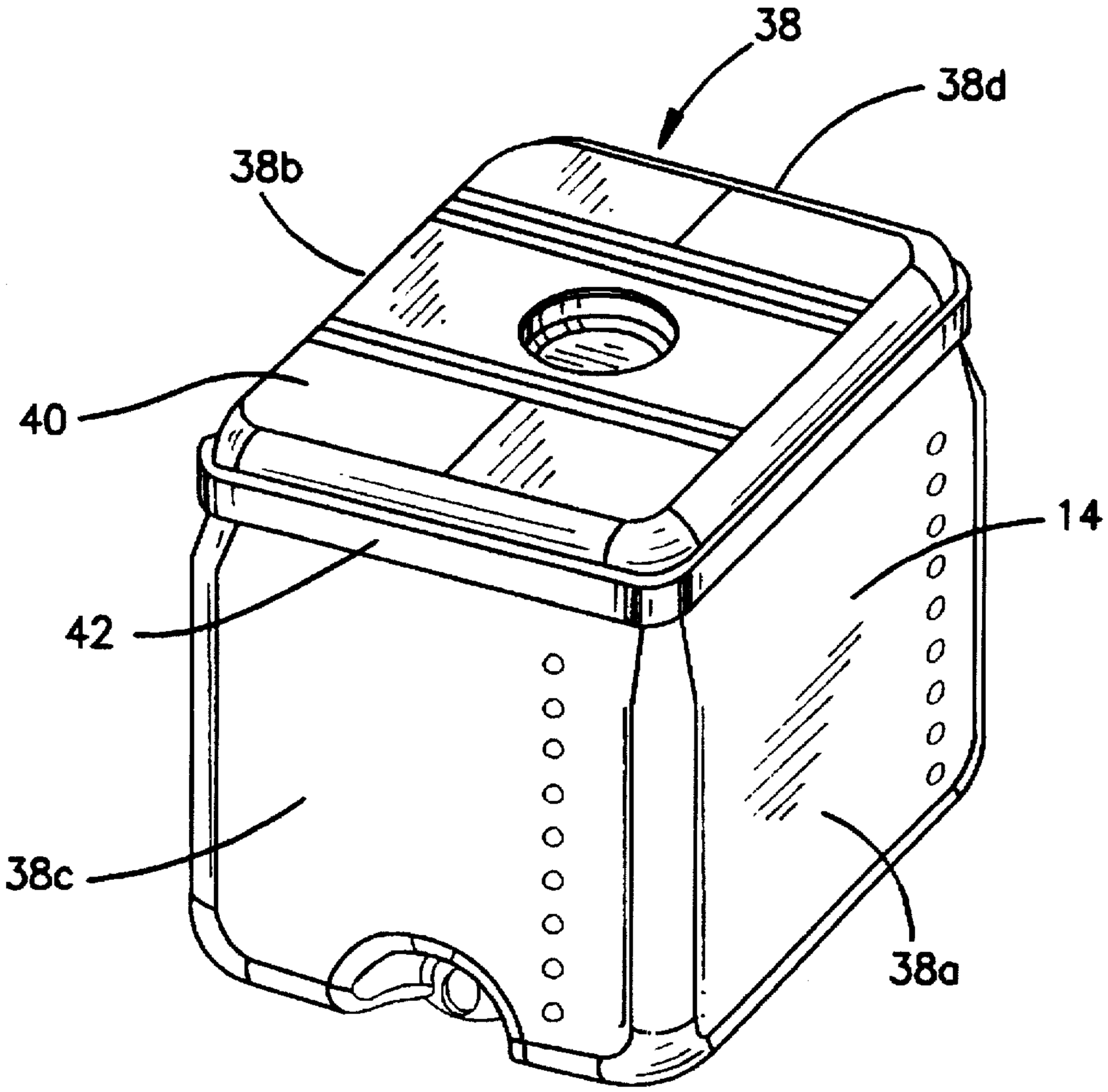



FIG. 10

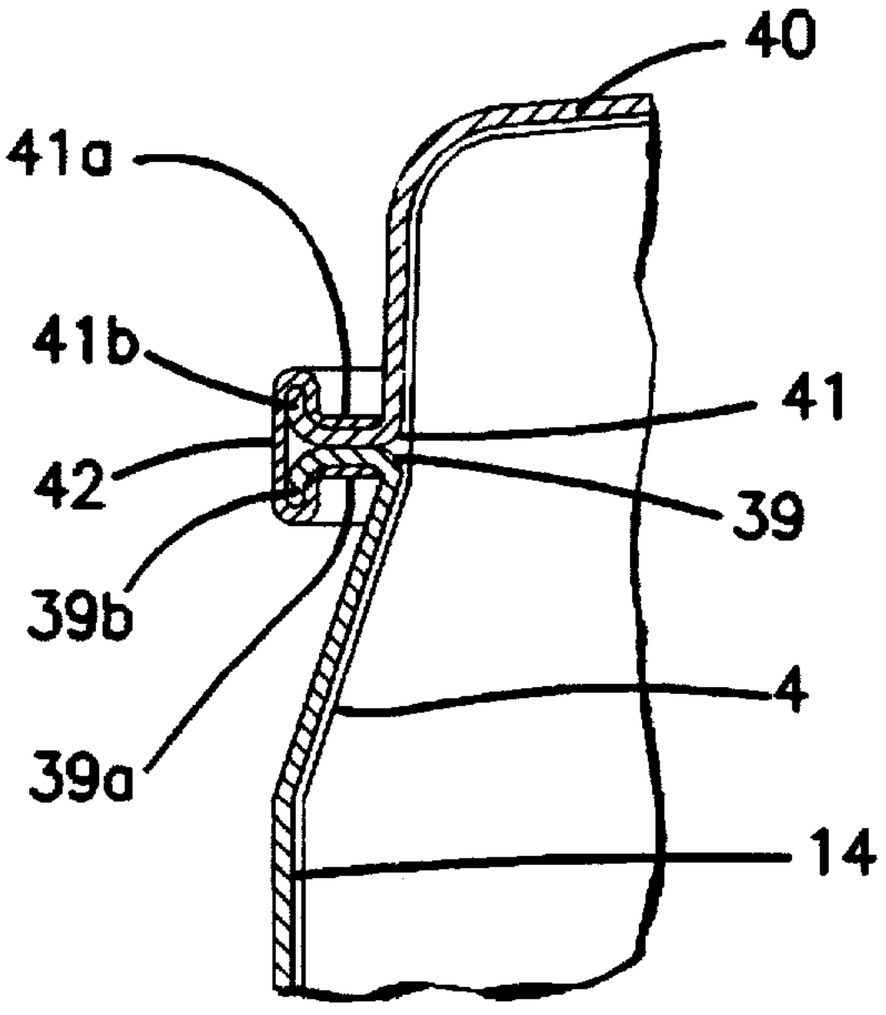



FIG. 11

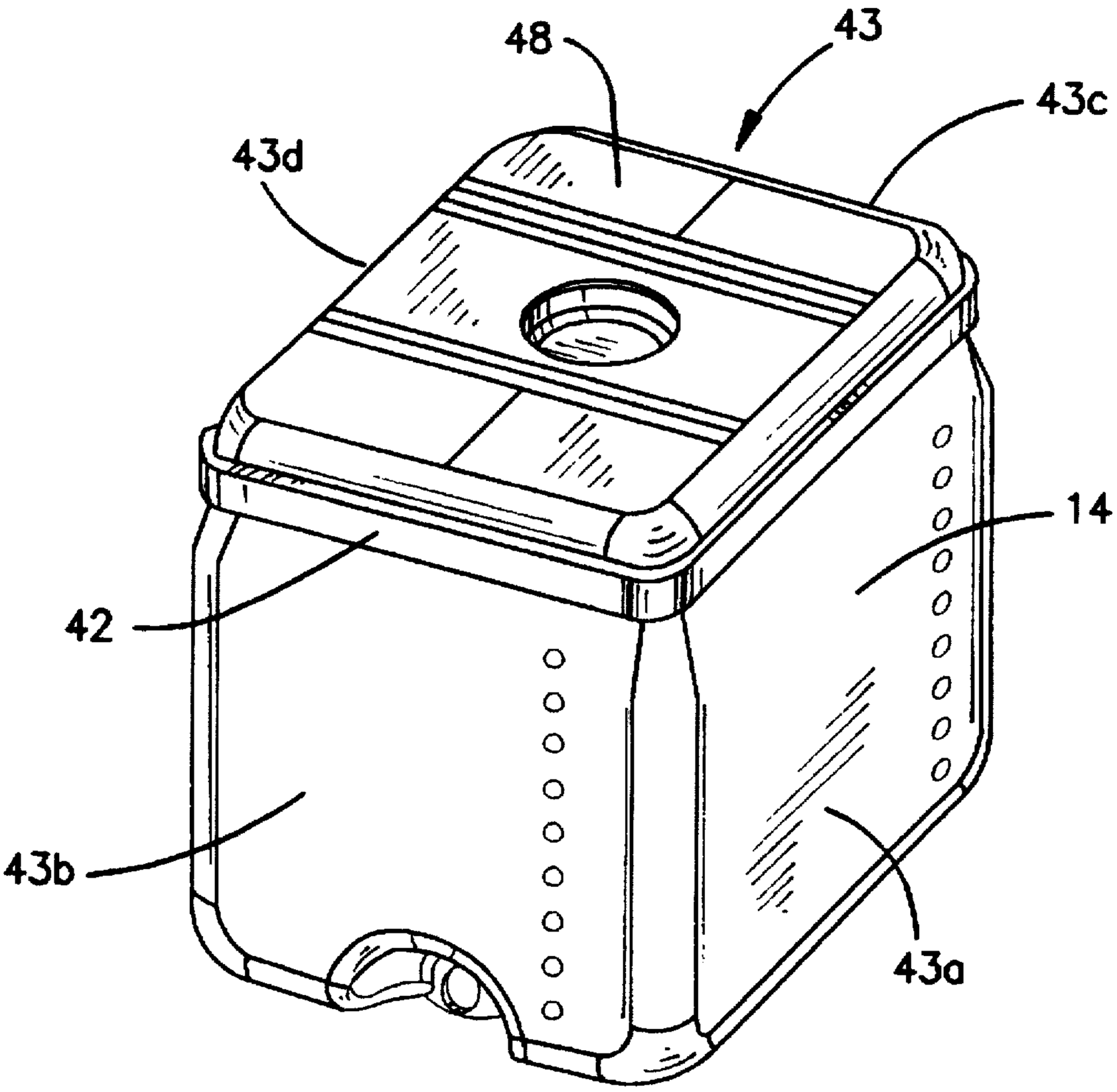



FIG. 12

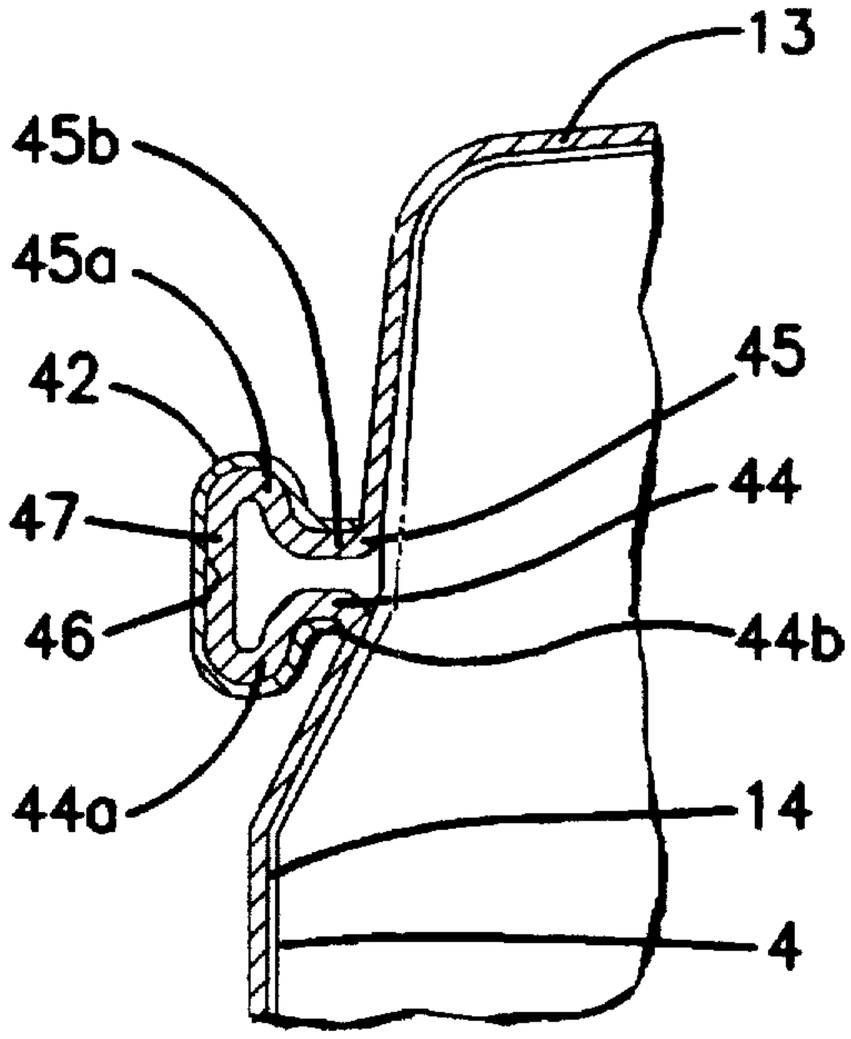



FIG. 13

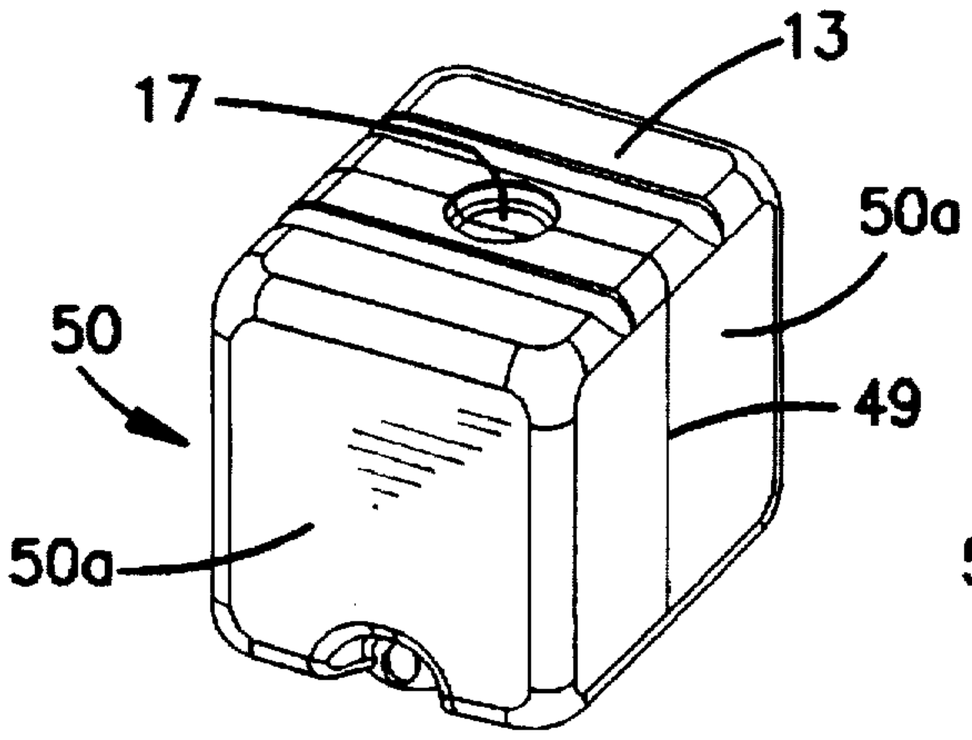



FIG. 14A

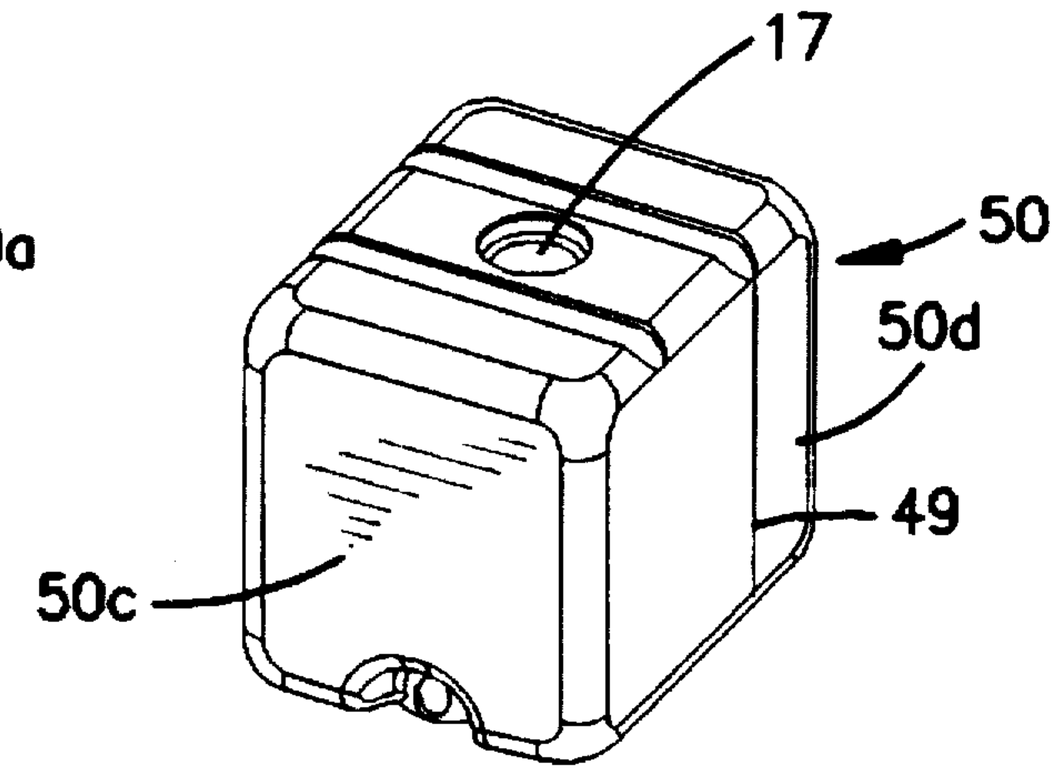



FIG. 14C

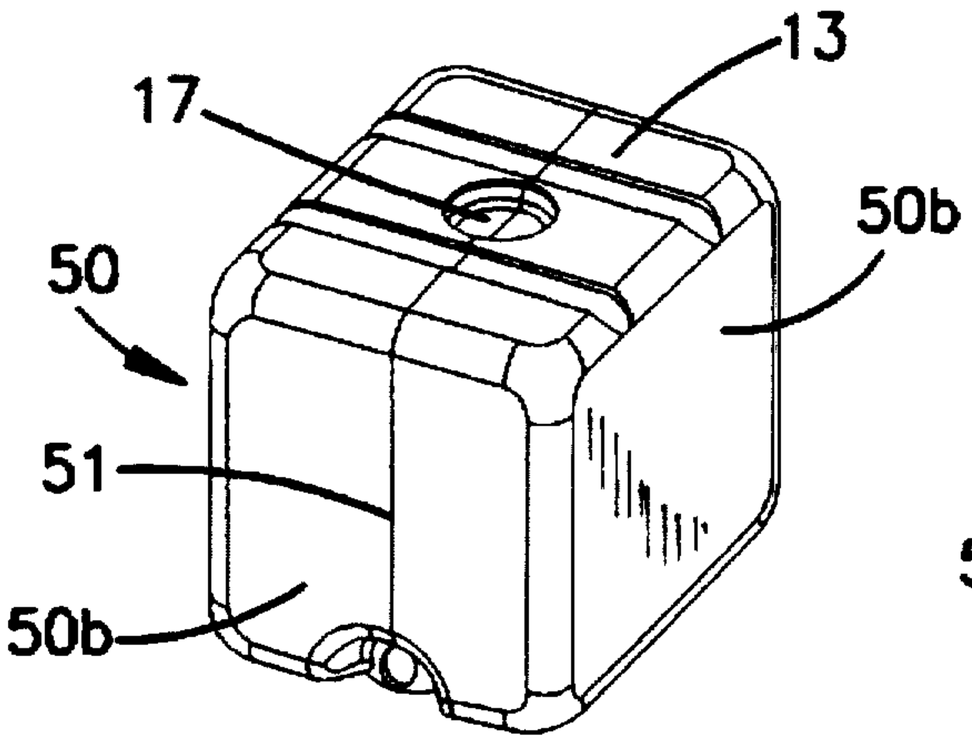



FIG. 14B

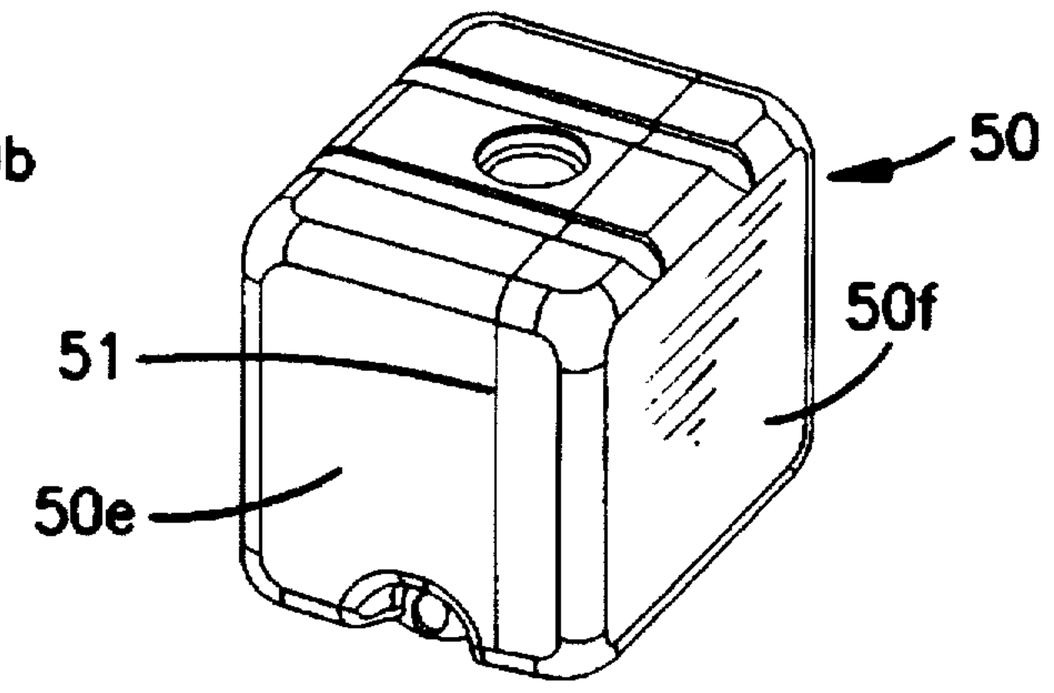



FIG. 14D

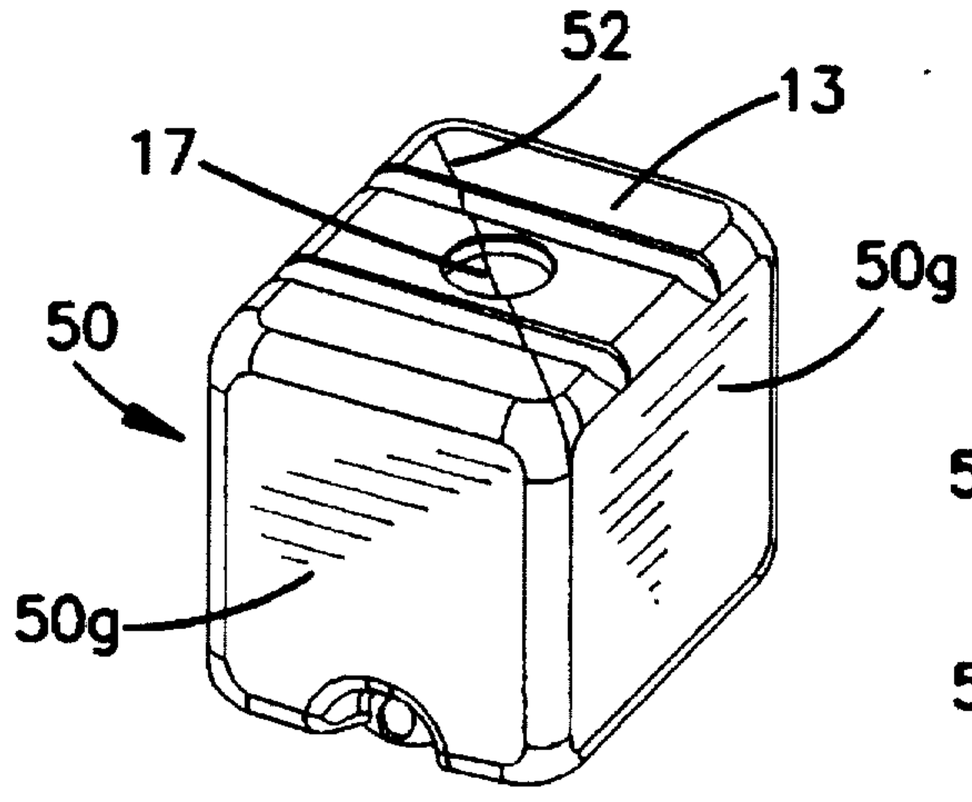



FIG. 14E

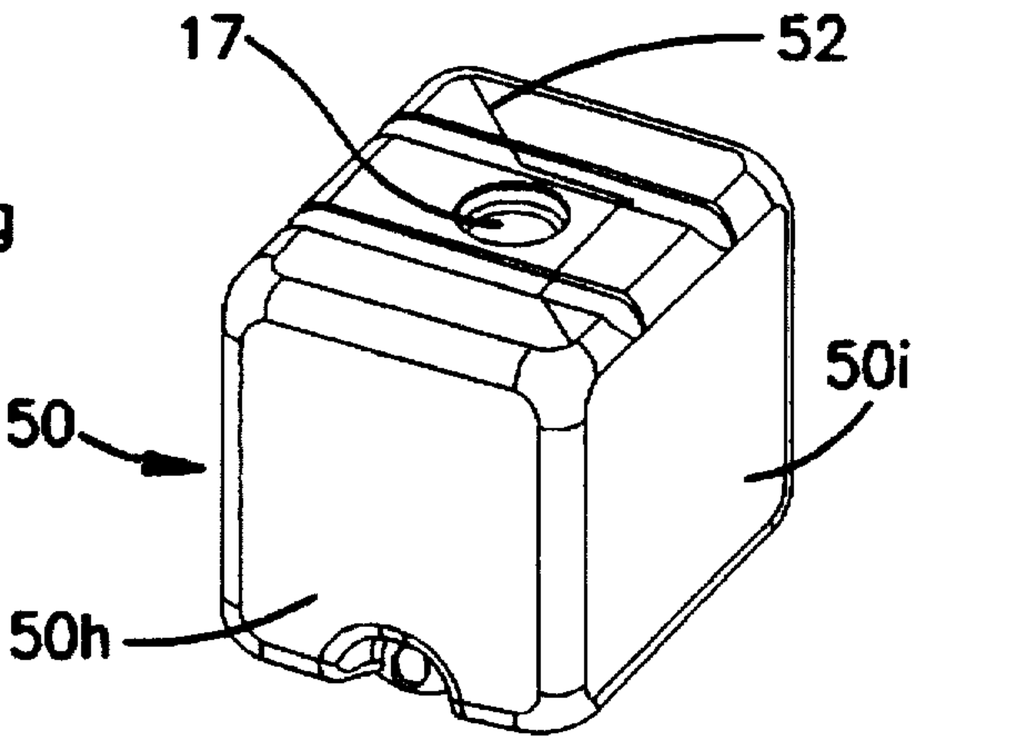



FIG. 14F

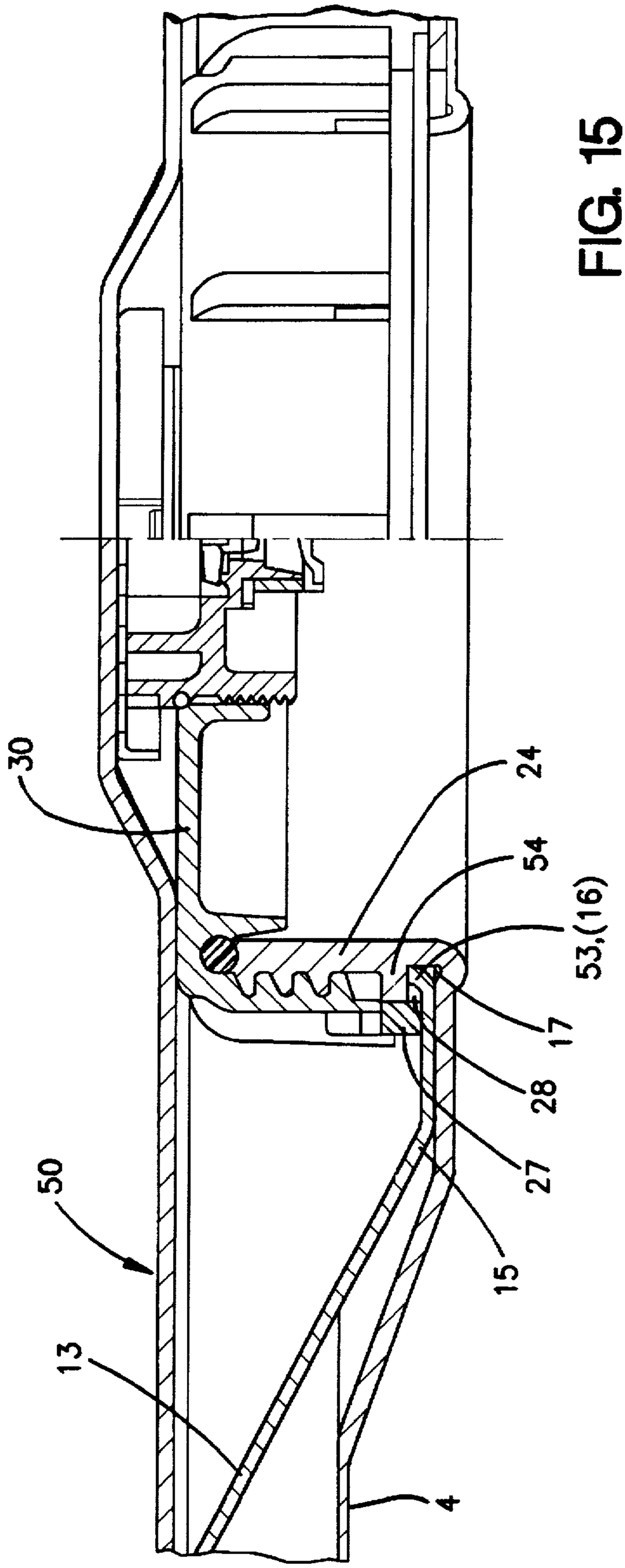



FIG. 15

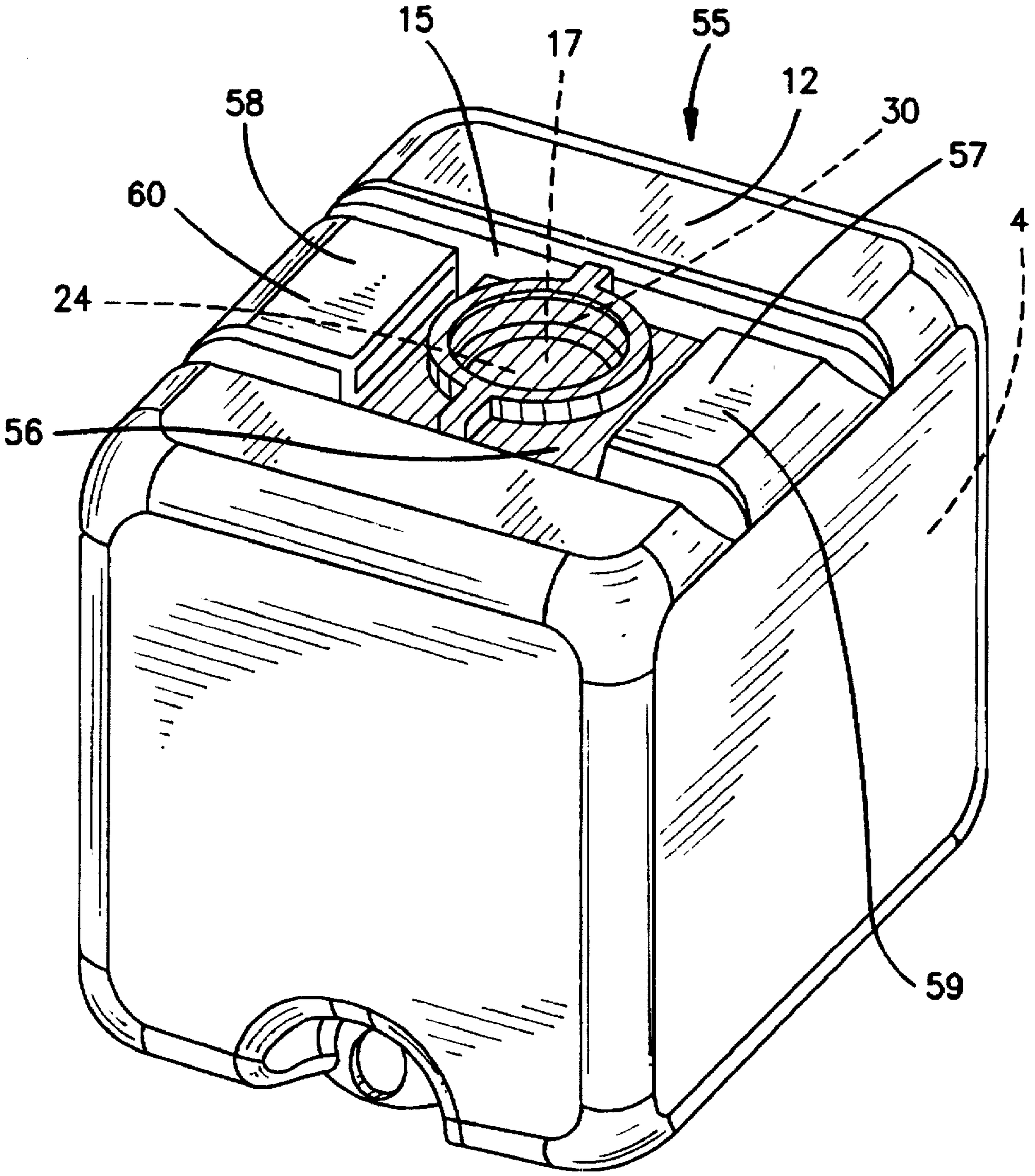



FIG. 16

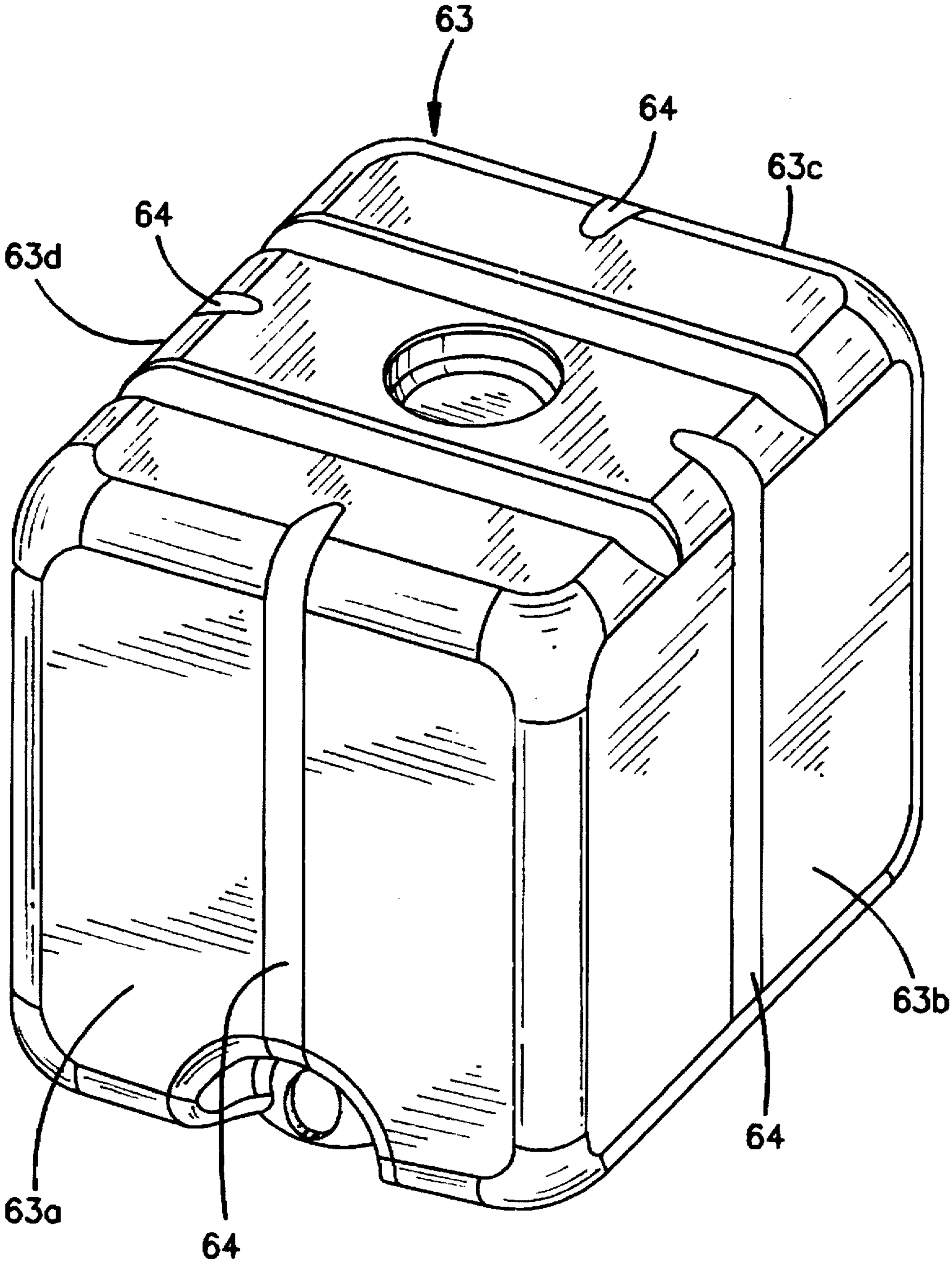



FIG. 17

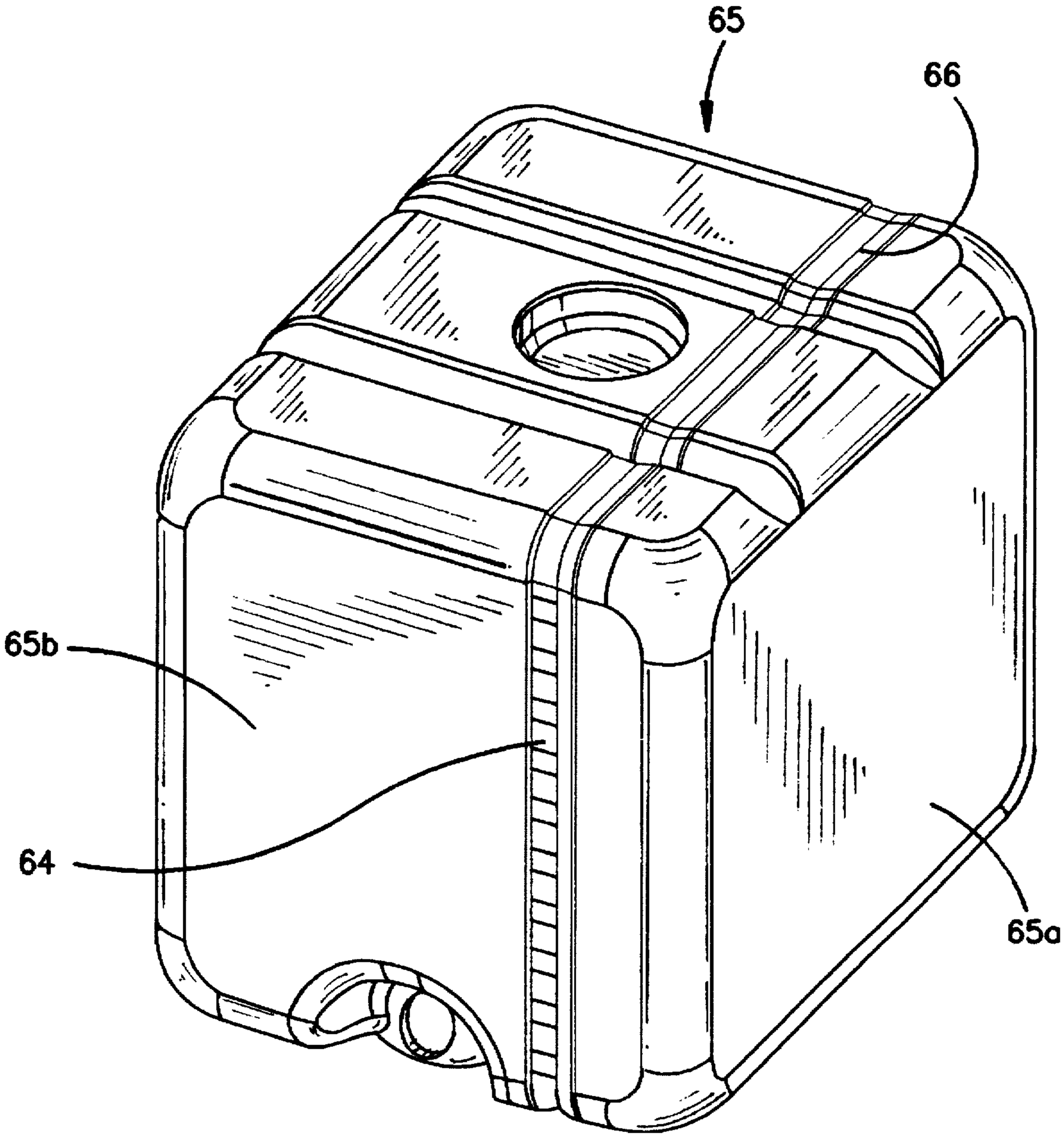



FIG. 18

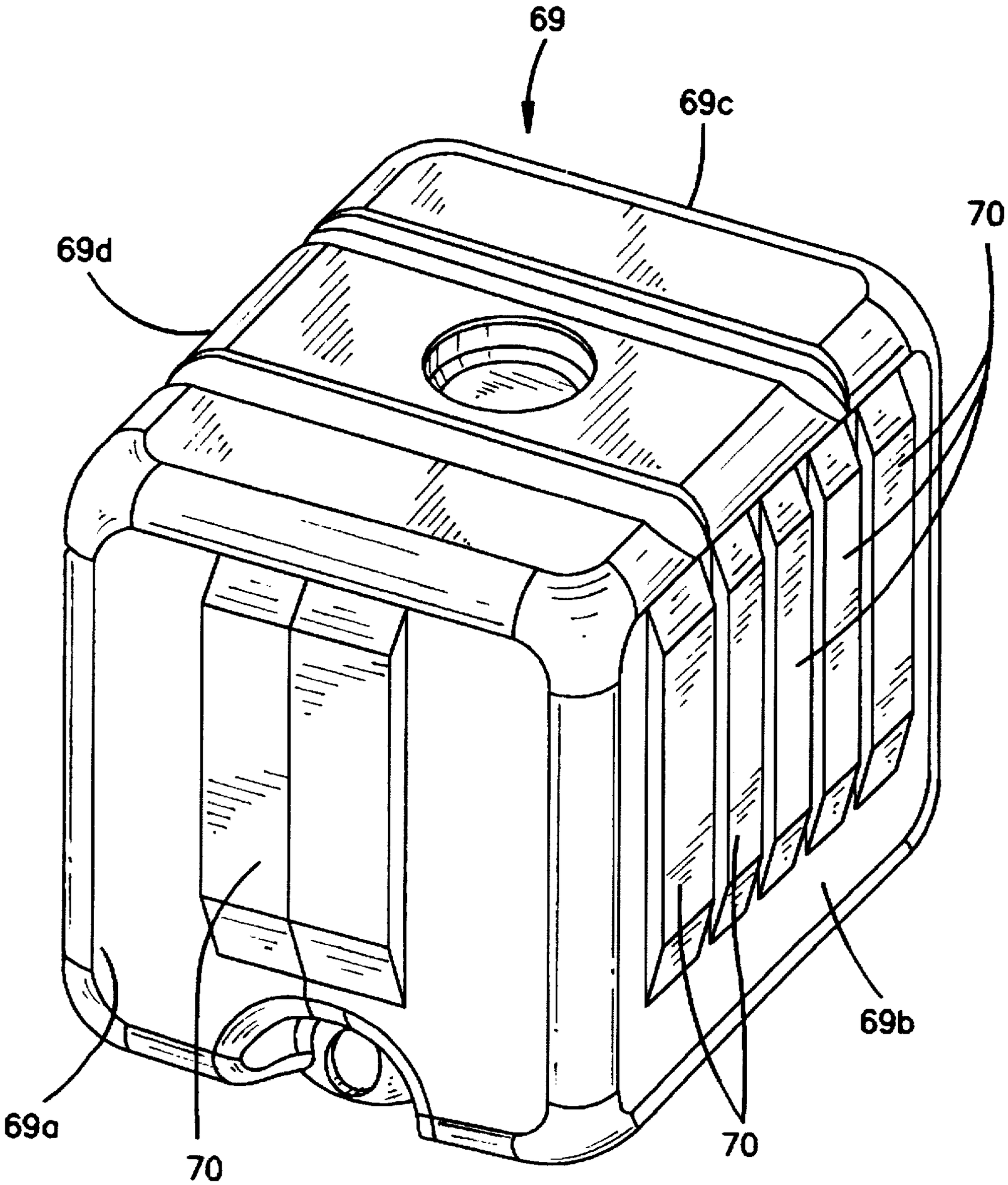



FIG. 19

# PALLET CONTAINER

This invention relates to a pallet container which consists era cube-shaped, blow molded fluid container, made of plastic which has one sealable opening each for filling and emptying, a drain bottom, a flexible inner liner made of plastic foil or a composite metal-plastic foil, a pallet which is designed as floor pan made of sheet metal or plastic which has a drain bottom designed to serve as a form-fitted receptacle for the fluid container, as well as an outer shell which abuts the fluid container and which is constructed as a grid casing made of metal rods or as a sheet metal casing. (DE 41 08 399 C1).

The pallet containers according to the field of art used primarily in the food industry, are particularly suited to be used as multi-way containers which can be reconditioned cost effectively while not polluting the environment with toxic substances, by allowing a complete emptying of the fluid and a nontoxid disposal of the inner liner, e.g., by incineration, and a simple cleaning.

In the conventional pallet container the insertion of the inner liner into the interior of the fluid container through the filler neck is cumbersome and time consuming. Another disadvantage is the fact that the inner liner which features a short filler tube whose opening rim is wrapped outwardly over the opening rim of the filler neck of the fluid container, and clamped onto the filler neck by the lid of the same, may tear during transport under the influence of the surge forces of the fluid located in the liner in the area of the filler tube.

The pallet container according to this invention is characterized by the following advantages:

The construction of the fluid container, blow molded from plastic with an integrally molded hinged cover, and the two-part design of the container permit a simple insertion of the inner liner into and removal from the container. The dimensionally stable, flexible upper part of the inner liner into which the filler neck is integrally molded, prevents the inner liner from tearing in the area of the filler neck which is particularly vulnerable during transport due to the influence of the fluid's surge forces, and it ensures a snug fit of the inner liner onto the interior wall of the fluid container.

In the following the invention is described by exemplified embodiments illustrated in a drawing. It shows

FIG. **1** an exploded view of a pallet container with a fluid container with an inner liner and a removable lid,

FIG. **2** a perspective view of the fluid container of the pallet container according to FIG. **1**,

FIG. **3** a detail according to section III of FIG. **2**,

FIG. **4** a longitudinal section through the filling area of the pallet container according to FIG. **1** in an enlarged view,

FIGS. **5** enlarged fragmentary sections of various and **6** removable closures for the fluid container of the pallet container according to FIG. **1**,

FIGS. **7** enlarged fragmentary sections of fluid containers to **9** with an opening rim pulled up to the upper edge of the outer grid casing and with various embodiments of removable closures,

FIG. **10**. a perspective view of a fluid container with another embodiment of a removable closure,

FIG. **11**. a section through the area of the opening rim of the fluid container according to FIG. **10** in an enlarged view,

FIG. **12**. a perspective view of a fluid container with an integrally molded hinged cover,

FIG. **13**. a section through the area of the opening rim of the fluid container according to FIG. **12** in an enlarged view,

FIGS. **14***a* various types of sections of a blow molded fluid container in two halves to **14***f*



FIG. **15** an enlarged longitudinal section trough the opening area of a fluid container which has been bisected through the center of the opening in the upper wall to accommodate the filler neck

FIG. **16** the perspective view of a fluid container with a splash guard for the closure of the filler neck and two document holders located beneath protective covers.

FIGS. **17** perspective views of a fluid containers with fluid level indicator strips arranged and **18** in different ways on the lateral container walls,

FIG. **19** the perspective view of a fluid container with writing surfaces integrated into the container walls.

The pallet container **1** according to FIG. **1**, which may be used as a one-way or multi-way container to transport and store fluids, features as main component parts a cube-shaped, blow molded fluid container **2** made of plastic which is equipped with a drain bottom **3** and a flexible inner liner **4** made of plastic foil or a composite metal-plastic foil, a pallet **5**, which is constructed as a floor pan **6** made of sheet metal or plastic with a drain bottom **7**, and which serves as a form-fitted receptacle for the fluid container **2**, as well as an outer casing **8** which abuts the fluid container **2** and which is made of metal rods **9**, **10** which cross each other vertically and horizontally.

The fluid container **2** as shown in FIGS. **2** and **3** is sealed with a removable closure **12** which is positioned on top of the opening rim **11** of the container. The closure **12** is obtained by separating the upper wall **13** from the shell **14** of the blow molded container **2**.

The upper wall **13** of the fluid container **2** is blow molded with a centered transverse channel **15** onto which a centric short feed pipe is integrally molded which is cut or punched open before or after separating the upper wall **13** from the container shell **14**, so as to give the closure **12** a centric circular opening **17** (FIGS. **2** and **15**).

It is also possible to construct the container **2** without the filler neck in the channel **15**, and to cut the opening **17** from the channel **15** (FIG. **4**).

The lower part of the middle section of the front wall **18** of the fluid container **2** forms an arched recess **19** which is a hood-shaped injection molded plastic part with a short filler neck **20** integrally molded into the container **2**. The filler neck **20** is cut open at the arched recess **19** the blow molded container **2** giving the same a bottom opening **21**. Beneath the bottom opening **21** an outlet shield **67** is molded into the arched recess **19** covering the area **68** of the sheet metal floor pan **6** underneath the drain cock **23** (FIGS. **1** and **2**).

When inserting the inner liner **4** into the fluid container **2**, the drain nozzle **22** which is either blow molded into the liner or welded onto the same later, and which has an outside screw thread, is first pushed from the inside through the bottom opening **21** in the container front wall **18**; then a drain cock **23** is screwed onto the drain nozzle **22** which protrudes from the container **2** (FIG. **2**). Now the filler neck **24** of the inner liner **2** which is integrally molded into an dimensionally stable upper part **25** which may be integrally molded or welded onto the liner **4**, is pushed from the inside through the central opening **17** of the closure **12** which has been slightly lifted from the opening rim **11** of the fluid container **2**, causing the upper part **25** of the liner **4** to butt against the interior wall **26** of the closure **12**. The filler neck **24** of the inner liner **4** is held securely in the opening **17** of the closure **12** by means of a notched clamp collar **27** which is slipped over from above and which locks into an undercut **28** of the filler neck **24** (FIG. **4**).

The filler neck **24** which has an outside screw thread **29** and which is located at the inner liner **4** of pallet container

1 is sealed with a screw cap **30** which features an integrated relief pressure valve **31**.

FIGS. **5** and **6** show two embodiments **12***a*, **12***b* of a removable clamp lid having a clamp rim **32** to clamp the lids **12***a*, **12***b* onto the opening rim **11** of the fluid container **2** which features a corresponding counter-profile **11***a* to the clamp profile **32***a* of the cover rim **32**.

FIGS. **7** to **9** illustrate fluid containers **33** whose opening rim **34** is pulled up to the upper edge **35** of the grid casing **8** of the pallet container **1** and over the container closure **12***c*–**12***e*. The various container closures **12***c*–**12***e* designed as clamp lids have a clamp rim **32** with a clamp profile **32***a* by means of which the closures **12***c*–**12***e* are fastened to the inside **36** of the opening rim **34** of the containers **33** and which features a corresponding counter profile **34***a* to the clamp profile **32***a* of the cover rim **32**.

The fluid containers **33** with the closure embodiments **12***c*, **12***d*, shown in FIGS. **7** and **8**, feature water drain holes **37** in the raised opening rim **34**; in container **33** with closure **12***e* as shown in FIG. **9** drain holes **37** are featured in the opening rim **34** of the fluid container **33** and in the clamp rim **32** of the closure **12***e*.

The shell **14** of the fluid container **38** shown in FIGS. **10** and **11** features an opening rim **39** with a horizontal rim section **39***a* and a perpendicular rim section **39***b* angled downward; and the removable lid **40** features a bottom rim **41** with a horizontal rim section **41***a* which has been fitted to conform to the horizontal opening rim section **39***a* and a perpendicular rim section **41***b* angled upward. The opening rim **39** of the container **38** and the cover rim **41** are clinched together by a profiled metal clamp collar **42** across the two lateral walls **38***a*, **38***b*, the front wall **38***c* and the back wall **38***d* of the fluid container **38**.

A downwardly pointing outer rim **44***a* has been integrally molded into the upper rim **44** of the shell **14** of the fluid container **43** shown in FIGS. **12** and **13** which was blow molded in one piece; and an upwardly pointing outer rim **45***a* has been integrally molded into the lower rim **45** of the upper wall **13** of container **43** leaving a space between the rim joints **44***b*, **45***b*. The two outer rims **44***b*, **45***b* are connected by a ring-shaped bridge **46** which is of a lesser gauge compared to the outer rims. The ring land **46** is cut open at one lateral wall **43***a*, at the front wall **43***b* and the back wall **43***c* of container **43**, so that the upper wall **13** of container **43**, by being connected by a film hinge to the lateral wall **43***d* of the container shell **14**, forms a hinged cover **48**. The hinged cover **48** of container **43** is sealed with a profiled metal ring **42**.

Another possibility for a simplified insertion of the inner liner into the fluid container of the pallet container is found by dividing the blow formed fluid container into two halves; the bisection of the container may occur in different ways as illustrated by FIGS. **14***a* to **14***f*.

FIG. **14***a* shows a transverse sectioning **49** of a fluid container **50** across the central opening **17** in the upper wall **13** into two halves of equal size **50***a*, **50***a*.

FIG. **14***b* illustrates a longitudinal sectioning **51** of fluid container **50** through the central opening **17** in the upper wall **13** into two halves of equal size **50***b*, **50***b*.

FIG. **14***c* illustrates the offset transverse sectioning **49** of fluid container **50** adjacent to the wall opening **17** into two halves of unequal size **50***c*, **50***d*; and FIG. **14***d* shows the offset longitudinal sectioning **51** of container **50** into two halves of unequal size **50***e*, **50***f*.

Finally FIG. **14***e* shows a diagonal sectioning **52** of the fluid container **50** through the central opening **17** in the upper wall **13** into two halves of equal size **50***g*; and FIG. **14***f* shows an offset diagonal sectioning **52** of container **50** adjacent to the opening **17** into two halves of unequal size **50***h*, **50***i*.

In the fluid container **50**, shown in FIGS. **14***a*, **14***b* and **14***e*, which is divided transversely **49**, longitudinally **51** and diagonally **52** through the central opening **17** in the upper wall **13** of the container into two halves of equal size, the rim **53** of opening **17** which is formed by cutting through the short filler neck **16** which is integrally molded into the center of the channel **15** of container **50**, locks into the undercut **28** of the filler neck **24** of the inner liner **4** inserted into container **50**. The filler neck **24** of the inner liner **4** is held in place in the opening **17** of the upper wall **13** of the fluid container **50** by a notched clamp collar **27** which is slipped over from above. The two halves **50***a* of fluid container **50** are being held together by the clamp collar **27**, which surrounds the joint **54** formed by the undercut **28** of filler neck **24** of inner liner **4**, and through which the cap **30** which is screwed onto the filler neck **24**, is clamped to the channel **15** in the upper wall **13** (FIGS. **14** and **15**).

In order to protect the screw cap **30** of the fluid container **55** as shown in FIG. **16** from contamination, it is covered by an adhesive foil **56** which simultaneously serves as original seal.

According to FIG. **16** two document holders **57**, **58** covered by protective lids **59**, **60**, have been installed in the channel **15** of the closure **12** of the fluid container **55** on both sides of the opening **17** which is the receptacle for filler neck **24** of the inner liner **4**.

In the fluid container **2** according to FIG. **2** a protective lid **61** has been integrated into the removable closure **12** for screw cap **30** of the filler neck **24** and the two document holders **57**, **58**.

In order to protect the various fluid containers **2**, **33**, **38**, **43**, **50** and **55** from uv-rays, they may be dyed in a dark color, preferably black.

According to FIG. **2** observation holes **62** have been installed in the front wall **18** of the fluid container in order to control the fluid level.

According to FIG. **17** the fluid container features four observation strips **64** made of transparent material which have been integrated into the lateral walls **63***a*–**63***d* to control the fluid level.

According to FIG. **18** the observation strip **64** has been installed in the seam **66** between the two halves **65***a*, **65***b* of the fluid container **65**.

According to FIG. **19** the fluid container **69** for the pallet container **1** features lateral walls **69***a* **69***d* with integrated raised writing surfaces **70**.

I claim:

**1**. In a pallet container which comprises a cube-shaped, blow molded fluid container made of plastic which has one sealable opening each for filling and emptying, and which has a drain bottom and a flexible inner liner made of a liquid-impervious foil, a pallet comprising a floor pan which has a drain bottom which serves as a form-fitted receptacle for the fluid container, as well as an outer shell which encloses the fluid container and which is constructed as a grid casing made of metal rods or as a sheet metal casing; the improvement wherein the exchangeable inner liner (**4**) is held in an opening (**17**) in the top (**12**, **13**) of the fluid container (**2**, **33**, **38**, **43**, **50**, **55**), wherein a downwardly pointing outer rim (**44***a*) is integrally molded to an upper rim (**44**) of the fluid container (**43**) blow molded in one piece, and an upwardly pointing outer rim (**45***a*) is integrally molded to a lower rim (**45**) of the top (**13**) of the container (**43**) leaving a space between rim joints (**44***b*, **45***b*), and two

outer rims (**44***a*, **45***a*) which are connected by a ring-shaped bridge (**46**) which is thinner than the outer rims (**44***a*, **45***a*), and a ring land (**46**) which is cut open at three walls (**43***a*–**43***c*) of the container (**43**) so that the top (**13**) of the container (**43**) is connected by a thin hinge (**47**) to the container shell (**14**) to form a hinged cover (**48**).

**2**. A pallet container according to claim **1**, wherein the inner liner (**4**) has a dimensionally stable, flexible upper part (**25**) into which the filler neck (**24**) is integrally molded and which when inserted, rests against the top (**12**, **13**) of the fluid container (**2**, **22**, **38**, **50**, **55**).

**3**. A pallet container according to claim **1**, wherein the filler neck (**24**) of the inner liner (**4**) is held securely in the opening (**17**) of the top (**12**, **13**) of the fluid container (**2**, **33**, **38**, **43**, **50**, **55**) by a clamp collar (**27**) which locks into an undercut (**28**) of the filler neck (**24**).

**4**. A pallet container according to claim **1**, wherein the fluid container (**2**, **33**) has a removable closure (**12***a*, **12***b*; **12***c*–**12***e*).

**5**. A pallet container according to claim **1**, wherein the shell (**14**) of the fluid container (**38**) has an opening rim (**39**) with a horizontal rim section (**39***a*) and a rim section (**39***b*) angled downward, and a removable lid (**40**) has a bottom rim (**41**) with a horizontal rim section (**41***a*) which has been fitted to conform to the horizontal rim section (**39***a*) and a rim section (**41***b*) angled upward, the opening rim (**39**) in the shell and the cover rim (**41**) being clinched together by a clamp collar (**42**).

**6**. A pallet container according to claim **1**, characterized by a sectioning (**49**, **51**) of the fluid container (**50**) into two halves of equal size (**50***a*, **50***a*; **50***b*, **50***b*).

**7**. A pallet container according to claim **1**, characterized by a sectioning (**49**, **51**) of the fluid container (**50**) into two halves of unequal size (**50***c*, **50***d*; **50***e*, **50***f*).

**8**. A pallet container according to claim **1**, characterized by a diagonal sectioning (**52**) of the fluid container (**50**) into two halves (**50***g*) of equal size.

**9**. A pallet container according to claim **1**, characterized by a diagonal sectioning (**52**) of the fluid container (**50**) into two halves of unequal size (**50***h*, **50***i*).

**10**. A pallet container according to claim **1**, wherein an opening rim (**34**) of the fluid container (**33**) extends up to the upper edge (**35**) of the grid casing (**8**) of the pallet container (**1**) over the container closure (**12***c*–**12***e*), and the container closure (**12***c*–**12***e*) comprises a clamp lid having a clamp rim (**32**) with a clamp profile (**32***a*) by means of which the closure (**12***c*–**12***e*) is clamped to the inside (**36**) of the opening rim (**34**) of the container (**33**) which has a corresponding counter profile (**34***a*) to the clamp profile (**32***a*) of the cover rim (**32**).

**11**. A pallet container according to claim **10**, characterized by water drain holes (**37**) in the opening rim (**34**) and/or in the clamp rim (**32**) of the closure (**12***c*–**12***e*).

**12**. A pallet container according to claim **1**, wherein the closure (**12***a*, **12***b*) of the fluid container (**2**) is a clamp lid with a clamp rim (**32**) which is used to clamp the closure (**12***a*, **12***b*) onto the opening rim (**11**) of the fluid container (**2**) and which has a corresponding counter profile (**11***a*) to the clamp profile (**32***a*) of cover rim (**32**).

**13**. A pallet container according to claim **1**, wherein an adhesive foil (**56**) protects against contamination and also serves as an original seal for a screw cap (**30**) of the fluid container (**55**).

**14**. A pallet container according to claim **1**, further comprising observation holes (**62**) in at least one lateral wall (**18**) of the fluid container (**2**) to give a visible indication of the fluid level.

**15**. A pallet container according to claim **1**, having an observation strip (**64**) made of transparent material, which is integrated into at least one lateral wall (**63***a*) of the fluid container (**63**) in order to give a visible indication of the fluid level.

**16**. A pallet container according to claim **1**, further comprising at least one observation strip (**64**) on a seam (**66**) between two halves **65***a*, **65***b*) of the fluid container (**65**).

**17**. A pallet container according to claim **1**, further comprising an outlet shield (**67**) which is blow molded with the fluid container (**2**) with an arched recess (**19**) in a front wall (**18**) in a bottom area of the fluid container (**2**), and a bottom opening (**21**) for a drain nozzle (**22**) of the inner liner (**4**) to serve as a receptacle for a drain cock (**23**) which is connected to the drain nozzle (**22**), or which is blow molded onto the container (**2**) as a pre-manufactured injection molded part.

**18**. A pallet container according to claim **1**, further comprising raised surfaces (**70**) for labeling which are integrally molded into at least one lateral wall (**69***a*) of the fluid container (**69**).

**19**. In a pallet container which comprises a cube-shaped, blow molded fluid container made of plastic which has one sealable opening each for filling and emptying, and which has a drain bottom and a flexible inner liner made of a liquid-impervious foil, a pallet comprising a floor pan which has a drain bottom which serves as a form-fitted receptacle for the fluid container, as well as an outer shell which encloses the fluid container and which is constructed as a grid casing made of metal rods or as a sheet metal casing; the improvement wherein the exchangeable inner liner (**4**) is held in an opening (**17**) in the top (**12**, **13**) of the fluid container (**2**, **33**, **38**, **43**, **50**, **55**), wherein the inner liner (**4**) is held in top (**12**, **13**) of the fluid container (**2**, **22**, **38**, **43**, **50**, **55**) by a dimensionally stable filler neck (**24**) with an outside screw thread (**29**) onto which a screw cap (**30**) is placed, further comprising document holders (**57**, **58**) which are installed on both sides of an opening (**17**) located in a channel (**15**) of the top (**12**, **13**) of the fluid container (**55**) with the opening (**17**) for the filler neck (**24**) of the inner liner (**4**).

**20**. A pallet container according to claim **19**, further comprising protective covers (**59**, **60**) for the document holders (**57**, **58**), which have been integrated into the top (**12**, **13**) of the fluid container (**55**).

**21**. A pallet container according to claim **19**, further comprising a protective lid (**61**) integrated into the top of the fluid container (**2**) to cover the screw cap (**30**) of the filler cap (**24**) and the document holders (**57**, **58**).

**22**. A pallet container according to claim **21**, having a dark tinting of the fluid container (**2**, **33**, **38**, **43**, **50**, **55**) as protection against uv-rays.

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